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Cc: [MCCLINCY Matt](#)
Subject: FW: CSM questions
Date: 04/07/2006 09:47 AM

Jean,

Thanks for providing the 1st cut of the list of questions we said we'd get to the LWG to kick-off the CSM Framework effort. As usual, you did a great job. I included some comments & some additional thoughts *in italics & blue font* on your list of "key questions" below.

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-----Original Message-----

From: Jean Lee [<mailto:jean.lee@eilttd.net>]
Sent: Tuesday, April 04, 2006 11:43 AM
To: Chip Humphrey; Eric Blischke; ANDERSON Jim M
Subject: CSM questions

Hi Chip, Eric and Jim,

Sorry for the delay. This is what Val and I could recall from the meeting and also some other ideas from subsequent discussions.

As described in the management goals for the site, we want a cost-effective cleanup that achieves protection of health and environment, including special status species and cultural resources. Objectives include a reduction of contamination in fish and in the habitat to levels that are healthy for the fish and protective of human uses. Therefore, we need some idea of the relative inputs to the system from different types of sources (on a mass basis) to frame an approach to cleanup and risk management that is tailored to increase our chances of success. To date, we have a very heavy emphasis on sediment chemistry in our data collection and conceptual focus for the RI. That said, we have not yet asked and answered questions that will help us understand whether the heavy focus on sediments is well placed or misplaced. A focus on sediments nearly exclusively as the major source for contamination in fish and risk generally may or may not be well placed. Whether or not it is well placed depends upon the relative importance of sediments as a source of mass loading of contaminants as compared to other mass loadings on the system. As a result, we need to ask and answer some basic questions and include this refined conceptual thinking in our CSM. Key questions that we should address are as follows:

Do we have a sense of the magnitude of total mass loading on the system of risk driver contaminants?

I agree that we need some idea of the total mass loading on the system, particularly for the F&T model, but I'm not sure what level of effort & detail we need. Since you ask..., "Do we have a sense...", maybe we're on the same page.

*The **major** contaminant inputs (i.e., sources) to the river are from upland sources (including direct discharges) & upstream sources. The surface water data the LWG has collected (& is continuing to collect) & their proposed sediment traps & coring (radioisotope sampling) should give us a good idea of what has been & what is coming into the Study Area. I'm hoping we can use these data for simple mass loading estimates from upstream sources.*

The goal of upland source control is to identify, evaluate, & control all significant upland sources of contamination by the time of the PH ROD. At the time of the ROD, any significant uncontrolled source will likely be included as part of the Site, & therefore further upland work will be conducted under federal CERCLA rules. I don't think we should require the LWG to go to great efforts determining mass loading from sources that will be controlled.

There may well be certain sources that we may not be able to completely control by the PH ROD, or even anytime soon after that. For instance, the larger City stormwater conveyance systems. While we're working hard to identify & control sources contributing to municipal stormwater, we may not be able to identify all these discrete sources, or find that a large portion of the contamination is contributed to the conveyance system from non-point sources. It's at these types of ongoing sources where we'll most likely need more detailed, accurate mass loading information.

With all that said, I still think we need some idea of the total mass loading on the system, particularly for the F&T model..., therefore agree with your next paragraph.

What are the major contamination inputs on a mass basis into the study area -- stormwater, wastewater, study area sediments, groundwater and inputs from upstream? From a mass balance perspective, what is the relative importance of these inputs for producing tissue loads and fish and risk in general? What is the single largest source? What are the relative magnitudes of the other sources?

What is the relative significance of flux of clean groundwater through dirty sediment at various locations to other sources of contamination?

I agree this is an contaminant transport pathway the LWG needs to evaluate. I've been thinking that the way they would do this is to look at contaminant concentrations in sediment & estimate pore water concentrations thru equilibrium partitioning. My follow-up question is..., does the LWG need to do this at every sediment chemistry station that detects COIs?

A corollary to this question is..., buried contaminated sediment can act as a source for surface sediment & pore water contamination. If the resulting surface sediment & pore water contamination (at the point of exposure) does not pose an unacceptable risk, we probabaly won't be concerned with that buried sediment contamination unless it's in are erosional area, that could be exposed at a later time. Furthermore, if the resulting risk is OK, we may not even be aware of the buried sediment contamination. The question is..., how would we identify currently buried sediment contamination that may be exposed from extreme flow events.

What is the water balance for the river? The hydrodynamic model has assumed that groundwater discharge inputs are low. Groundwater discharge has been subsequently mapped and measured. This information should be compiled along with outfall information.

I thought a lot of what we were trying to get out of the CSM Framework effort was to better & more completely understand how contaminants are being transported (or have been transported) to the river & how receptors are being exposed. The ERA Framework effort (& particularly the proposed measurement endpoint matrix) will get to a lot of this 2nd question..., how receptors are being exposed. However, that still leaves the 1st part (i.e., how contaminants are being transported to the river) unanswered. The LWG's CSM Site Summaries went a ways towards answering this 1st part, but focused very largely on GW. I think the LWG CSM Framework effort should address the question..., how are contaminants being transported (or have been transported) to the river.

-Jean

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